

REMARKS

Reconsideration of this application in view of the above amendment and following remarks is respectfully requested.

Restriction Requirement

Claims 1-15 (*i.e.*, the Group I claims) have previously been elected, without traverse, for continued prosecution in this application, and are currently pending. Claims 16-21 (*i.e.*, the Group II claims) have previously been canceled without prejudice to further prosecution of the same in a divisional application.

Election of Species

Applicants have previously elected species 1-4 for purpose of initial examination (*i.e.*, claims 10-15). If the elected species is found patentable, the search and examination will be extended to the withdrawn species of claims 1-9. Accordingly, claims 1-9 are subject to a provisional Restriction Requirement, which will be withdrawn upon allowance of a generic claim. If it was the Examiner's intent to enter a Restriction Requirement between the subject matter of claims 1-9 and claims 10-15 (as opposed to a provisional Restriction Requirement), Applicants request entry of the same on the record, thus permitting continued prosecution of the subject matter of claims 1-9 in a divisional application (which subject matter has yet to be examined).

Rejections Based on 35 U.S.C. §102(b)

Independent claim 10 stands rejected under 35 U.S.C. §102(b) as anticipated by both U.S. Patent No. 4,131,721 to Fung et al. ("Fung") and U.S. Patent No. 5,277,996 to Marchetti et al. ("Marchetti"), while dependent claims 11-13 stand rejected as anticipated by both Fung and Marchetti "as evidenced by" U.S. Patent No. 5,096,560 to Takai et al. ("Takai").

The above rejections are set forth in the Office Action at pages 2-7 and are not repeated herein for purpose of brevity. Rather, Applicants wish to focus on the

Examiner's comments under the heading "*Response to Arguments*" beginning at the middle of page 7 and ending at the bottom of page 9 of the 12/5/07 Office Action. In particular, Applicants will address what it means for the anode catalyst to be "supported on" graphitic carbon as recited in independent claim 10.

Applicants have previously asserted that the prior art does not teach the use of graphitic carbon as the catalyst support, and have previously amended claim 10 to recite that the "supported catalyst comprises a catalyst supported on graphitic carbon". This language was intended to clarify that the graphitic carbon served as the catalyst support, and not simply as general support in the context of the anode. The Examiner has not accepted this argument, stating instead:

"[T]he catalyst can be said to be indirectly supported by the carbon substrate, as the claim language does not positively define the manner of the support."

(See 12/5/07 Office Action at page 8, third sentence of penultimate paragraph.)

Of course, the term "supported on" must be read in light of the specification. While the Examiner is free to give claims their broadest reasonable interpretation in light of the supporting disclosure, it is not reasonable in this instance to read the term "supported on" to include catalyst that is "indirectly supported" as disclosed in the cited references. In short, the Examiner cannot read the claims in a manner that is inconsistent with the teaching of the specification. For example, a series of membrane electrode assemblies (MEAs) were made in Example 1 "using test electrodes with carbon black supported platinum catalysts having varied platinum loading on the supports" (see specification at page 25, lines 21-25, *emphasis added*).

While Applicants believe that it is clear from the above text (as well as the disclosure of the specification as a whole) that the supported catalyst as recited in claim 10 "comprises a catalyst supported on graphitic carbon", Applicants have further amended claim 10 to recite that the supported catalyst comprises a catalyst "supported and loaded on" graphitic carbon. Support for this amendment may be found throughout the specification as originally filed, including the text quoted above (*i.e.*, specification at page 25, lines 21-25).

By way of this clarifying amendment, claim 10 now recites that the catalyst is supported and loaded on graphitic carbon (i.e., directly supported), and thus clearly distinguishes the claimed subject matter from the cited references which, in the opinion of the Examiner, disclose catalyst indirectly supported on a carbon support.

Accordingly, Applicants request that this ground of rejection be withdrawn as applied to claim 10. Since claims 11-13 depend from claim 10, and thus contain all the limitations thereof, these dependent claims are also novel over the cited references for the same reasons.

Rejections Based on 35 U.S.C. §103(a)

Independent claim 10 stands rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 4,810,594 to Bregoli et al. (“Bregoli”) in view of Fung, while dependent claims 11-15 stand rejected as obvious over various combinations of Bregoli, Fung, Takai, Marchetti and U.S. Patent No. 5,681,435 to Joshi et al. (“Joshi”). Applicants respectfully traverse these rejections.

As an initial matter, the Examiner states

Bregoli et al. do not teach the use of the graphitized carbon as the anode support.

(See 12/5/07 Office Action at page 12, lines 7-8.) Applicants are in full agreement with this statement. In fact, not only does Bregoli not disclose the use of graphitized carbon as the anode support, this reference teaches that “carbon black [i.e., non-graphitic carbon] is the preferred support for the anode catalyst” (see Bregoli at col. 3, line 28 to col. 7, line 2, *emphasis added*). While Bregoli recognizes that graphitized carbon black is preferred for as the cathode catalyst support (due to better corrosion resistance), Bregoli actually leads away from the use of graphitic carbon as the catalyst support for the anode (i.e., carbon black being preferred over graphitized carbon black as the anode catalyst support). This teaching of Bregoli cannot be ignored.

As the Examiner is well aware, a prior art reference must be considered in its entirety (i.e., as a whole), including portions that would lead away from the claimed

invention. (See, e.g., MPEP §2141.02, Part VI, 8th Ed., Rev. 6, Sept. 2007.) In this case, the primary reference (Bregoli) specifically teaches that non-graphitic carbon is preferred for the anode catalyst support, while graphitized carbon is preferred for the cathode catalyst support. Accordingly, when read as a whole, Bregoli not only fails to teach the use of graphitic carbon as the anode catalyst support, it specifically leads away from the use of graphitic carbon in this manner.

The addition of Fung does not cure the deficiencies of Bregoli. In this regard, the Examiner is of the opinion that:

Fung et al. teach that graphitized carbon is well suited for long-term use as a cathode but can also be used as the anode electrode. The motivation for using graphitized carbon as the anode material is in order to provide the same long-term use. Therefore, it would have been obvious to one of ordinary skill at the time the invention was made to use graphitized carbon as the anode material in order to provide the same long-term use.

(See 12/5/07 Office Action at page 12, lines 8-13.) Applicants respectfully, but strenuously, disagree with the Examiner's conclusion in this regard.

Fung teaches an electrocatalyst that uses non-graphitic carbon particles as the support for the platinum catalyst. The only mention of graphitic carbon (referred to in Fung as "graphitized carbon") has to do with mixing the electrocatalyst (*i.e.*, platinum catalyst supported on non-graphitic carbon particles) with graphitized carbon and a binder prior to being pressed onto a gold screen to form an electrode (*see* Fung at col. 4, lines 23-26). Thus, the graphitized carbon of Fung is serving as the anode in this context, and in no instance does Fung disclose an anode utilizing graphitic carbon as the catalyst support.

If one were to combine the teaching of Bregoli with Fung, the resulting combination does not yield the subject matter of claim 10. Instead, Bregoli teaches that non-graphitized carbon should be used as the anode catalyst support for the electrocatalyst, while Fung teaches that graphitic carbon can be mixed with a binder and an electrocatalyst prior to formation into an electrode. Thus, the resulting combination would be the electrocatalyst of Bregoli (*i.e.*, catalyst supported and loaded on non-

graphitized carbon black) mixed with the graphitized carbon and binder of Fung, yielding an anode electrode having graphitized carbon as the anode with a platinum on carbon black electrocatalyst (which does not satisfy the claim 10 requirement that the catalyst be supported and loaded on graphitic carbon, not just mixed with graphitic carbon used to form the anode that can indirectly serves as a catalyst support as noted by the Examiner).

In further support of the obviousness rejection, the Examiner goes on to state:

Furthermore, one of ordinary skill in the art would have been able to ascertain using graphitized carbon as the anode support with the predictable result of it acting in the same manner (as Fung et al. teach that graphitized carbon can be used in both the anode and cathode.) It has been held to be within the general skill of a worker in the art to select known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin 125 USPQ 416.

(See 12/5/07 Office Action at page 12, lines 13-19.) Again, Applicants respectfully disagree.

As discussed above, Fung does not teach the use of graphitized carbon as a catalyst support. Instead, it discloses that graphitized carbon can be combined with a binder and an electrocatalyst (*i.e.*, platinum catalyst supported and loaded on non-graphitized carbon particles) prior to formation into an electrode. As disclosed in Fung, the graphitized carbon serves as the support for the anode electrode, while the non-graphitized carbon serves as the catalyst support. Following the Examiner's logic, it may very well have been obvious to one skilled in the art to have used graphitic carbon as the anode support for the reasons noted by the Examiner. However, this is not the invention being pursued in this application. Instead, claim 10 recites the use of graphitic carbon as the catalyst support, a use for which the primary reference (*i.e.*, Bregoli) leads way from, and for which the secondary reference (Fung) teaches can be used as an anode support, but in no way suggests its use as a catalyst support (especially since the primary reference leads away from this very use, and the secondary reference follows suit by employing a non-graphitic carbon as the anode catalyst support).

Further, the Examiner's reliance on *In re Leshin* does not support an obviousness rejection under the facts presented in this application. *In re Leshin* is a 1960 decision by the Court of Customs and Patent Appeals (CCPA) which held that it was obvious to select a known plastic to make a container of a type previously known to be made of plastics. This is not analogous to the facts of this application, since the primary reference leads away from the very selection sought to be patented (*i.e.*, Bregoli teaches carbon black, and not graphitized carbon, as the support for the anode catalyst), and the secondary reference teaches the use of graphitized carbon for an entirely different purpose (*i.e.*, Fung teaches graphitized carbon as the anode support, and not as the anode catalyst support).

Accordingly, the combination of Bregoli with Fung fails to satisfy a *prima facie* showing of obviousness (or, if shown, is sufficiently rebutted by the above remarks), and Applicants request that this ground of rejection be withdrawn as applied to claim 10. Since claims 11-15 depend from, and thus contain all the limitation of, claim 10, these dependent claims are also novel over the cited references for the same reasons set forth above.

Other Reference Combinations

In the outstanding Office Action the Examiner also states:

Examiner would like to note that Applicants only argues against the pieces Fung et al. and Marchetti et al. alone. Applicant does not argue how any of the combinations are not proper. (It is especially noted that Applicant does not argue how the combination of Bregoli et al. and Fung et al. is not obvious, where Bregoli is used as the primary reference.) Therefore, the Examiner maintains the obviousness rejections and upholds the rejection of the primary reference, as above.

(see 12/5/07 Office Action at page 15.)

In Applicants' Amendment mailed October 4, 2007, the Examiner is correct to note that the undersigned attorney for Applicants focused on the issues raised by the Examiner under the heading "*Response to Arguments*" on pages 7-8 of the Office

Action mailed July 13, 2007. At the pages noted above in the July 13th Office Action, the undersigned attorney assumed (apparently incorrectly) that only those issues identified by the Examiner under the heading "*Response to Arguments*" remained in dispute. It was not the undersigned attorney's intention to ignore any of the rejections, and the undersigned submits that all the outstanding rejections as applied to independent claim 10 have been fully addressed in this Amendment.

As for dependent claims 11-15, the undersigned also submits that, to the extent that independent claim 10 is found patentable, all claims that depend therefrom are patentable for the same reasons as applied to claim 10. Accordingly, the undersigned attorney has focused on the rejections of independent claim 10, and has not specifically addressed each of the individual rejections as applied to the dependent claims. Thus, the undersigned has not ignored these rejections, but has instead focused on those rejections that are dispositive to the patentability of pending claims 11-15.

Conclusion

For the reasons set forth above, Applicants respectfully submit that claims 10-15 are patentable over the references of record, and request that these claims be passed to allowance.

Lastly, and assuming the Examiner finds claims 10-15 allowable, Applicants request rejoinder and examination of claim 1-9. Alternatively, and as mentioned above, if it was the Examiner's intent to enter a Restriction Requirement between the subject matter of claims 1-9 and 10-15 (as opposed to a provisional Restriction Requirement), Applicants request clarification and entry of the same. If such a Restriction Requirement is made of record, Applicants will cancel claims 1-9 and pursue this subject matter in a corresponding divisional application (which subject matter has yet to be examined).

A good faith effort has been made to place this application in condition for allowance. However, should any further issue require attention prior to allowance, the Examiner is requested to contact the undersigned at (206) 622-4900 to resolve the same.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,
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